CHAPTER 9

Cabling and Configuring the 25 Mbps Port Adaptor Modules

This chapter describes cabling and configuration procedures for the LightStream 1010 ATM switch 12-port, 25-Mbps PAMs. When your switch leaves the factory, it is configured as specified in your order and is ready for installation and startup. As your communication requirements change, you might want to upgrade your system, add components, or change the initial configuration.

Software and upgrades require specific document part numbers and other frequently updated information; therefore, only basic software configuration guidelines are included in this publication. Detailed, up-to-date instructions are included in the LightStream 1010 ATM Switch Software Configuration Guide and command-line interface (CLI) command descriptions are provided in the LightStream 1010 ATM Switch Command Reference.

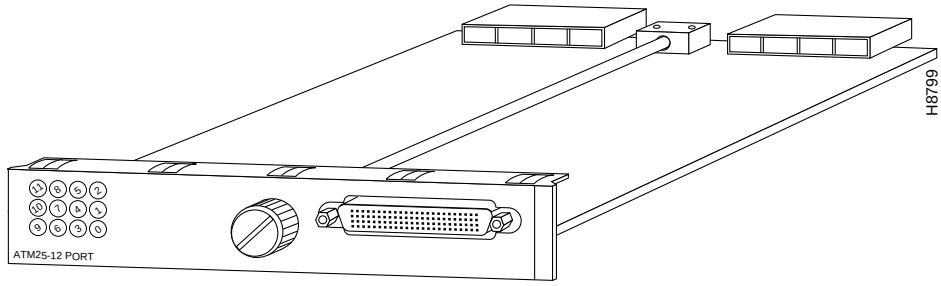
This chapter contains the following information:

- Overview of the 25-Mbps Port Adapter Module
- Connecting the Interface Cables and Checking the LEDs
- Configuring the Interfaces

Overview of the 25-Mbps Port Adapter Module

The 25-Mbps Port Adapter Module has twelve 25.6 Mbps ATM ports. Each port is compliant with the ATM Forum PHY standard for 25.6 Mbps over twisted pair cable and is ideal for workgroup links (see Figure 9-1). Any of the twelve ports on the PAM can be configured as redundant links using the switch's routing protocols. The PAM has a 96-pin Molex connector and a multi-leg 12 RJ-45 cable assembly.

Figure 9-1 25-Mbps PAM



Each port on the PAM supports single, local clocking only.

Traffic-pacing allows the aggregate output traffic rate on port group 0 to 5 or 6 to 11 to be set to a rate below the line rate; this is useful when communicating with a slow receiver. Pacing cannot be done on any individual port but on a group of six ports.

The plug-and-play mechanisms of the LightStream 1010 allow the switch to come up automatically. All configuration information for port adapter modules can be saved between hot swaps and switch reboots, while interface types are automatically discovered by the switch. This eliminates mandatory manual configuration.

The LightStream 1010 supports any combination of port adapter modules. Customers can configure their switches with only the number and type of interfaces required, with up to 96 25-Mbps ports.

This section describes the following:

- 25 Mbps PAM Features
- 25 Mbps PAM Applications

25 Mbps PAM Features

The 25 Mbps PAMs provide the following features:

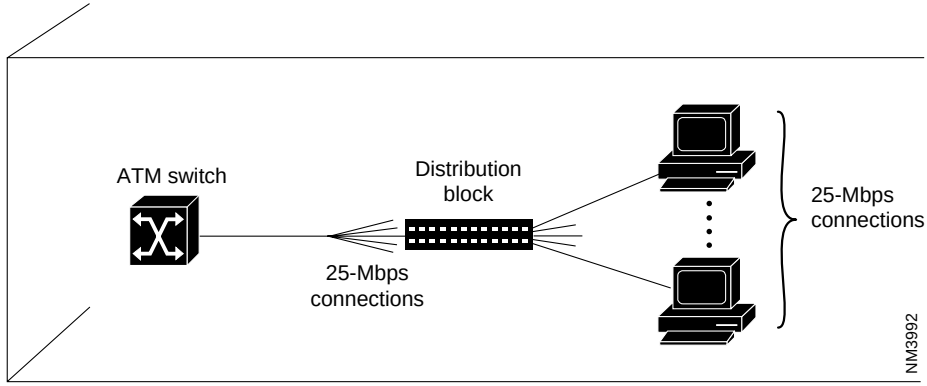
- Support for 12 ATM UNI ports at standard throughput rate of 25.6 Mbps full duplex.
- Compatible with ATM Forum 25.6 Mbps PHY specification for UTP-3, UTP-5, or STP-5 except that the RJ-45 connector is replaced with a Molex 96-pin female connector. (A cable assembly with 12 RJ-45 standard connectors is provided with the PAM.)
- A CPU bus interface for control and monitoring of the board ID EEPROM and LEDs.
- Priority queueing (4 levels) at each transmit (TX) output port.
- Buffer memory for transmit and receive (RX) cells and for each group of six ports; 128K by 16-bit local external SRAM for flexible queueing of 4,092 cells in transmit data path. The minimum queue allocations are selectable for each transmit queue priority from 4 to 60 cells, in multiples of 4, via software control.
- Support for multicasting to any combination of 12 transmit ports.
- Provides individual enabling for TX and RX of each port separately.
- Provides individual loopback control in each PMD device on board, via software control.
- Three 24-bit statistics counters per port for receive discarded cells, plus received and transmitted cells.
- Can generate per-port and per-condition maskable interrupt to the CPU in case of physical or line error conditions.

25 Mbps PAM Applications

The 25-Mbps port adapter module has 12 ports and is ideal for workgroup links. Figure 9-2 is an example of the 25-Mbps PAM application.

The various 25-Mbps PAMs provide 12 UTP-5 interface connections from the desktop to the wiring closet.

Figure 9-2 25-Mbps PAM Applications



Connecting the Interface Cables and Checking the LEDs

All ATM interfaces are full duplex. You must use the appropriate ATM interface cable to connect the ATM UTP PAM interface with an external ATM network.

This section describes the following:

- ATM Connectors
- 25-Mbps PAM Network Connections and LEDs

ATM Connectors

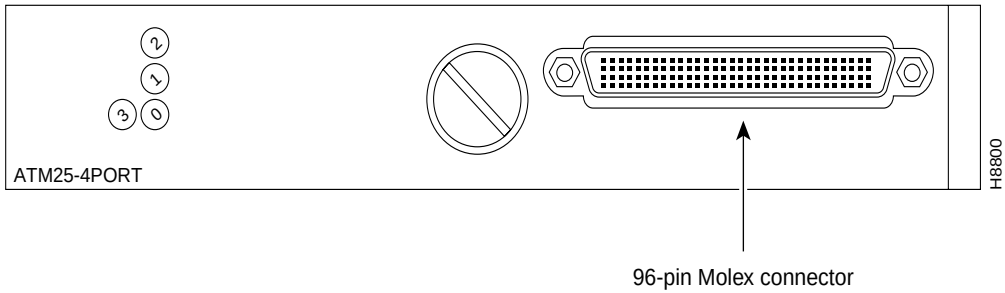
The 96-pin Molex connector is used to connect the 12 RJ-45 UTP to the end workstations. See the section “Preparing Network Connections” in the chapter “Preparing for Installation” for a description of a 96-pin Molex connector.

For UTP traffic, use the RJ-45 connector to connect the 25 Mbps PAM to the workstations. See the section “Preparing Network Connections” in the chapter “Preparing for Installation” for a description of an RJ-45 connector.

25-Mbps PAM Network Connections and LEDs

The 25-Mbps PAMs provide an interface to ATM end workstations for transmitting and receiving data at up to 25.6 Mbps bidirectionally. The PAM LEDs provide status information for the port adapter module's individual interface connections. (See Figure 9-3.)

Figure 9-3 25-Mbps PAM UTP Connections and LEDs



ATM Network Connections

Connect the ATM interface cables as shown in Figure 9-3. For detailed descriptions of ATM cabling requirements, refer to the sections "Preparing Network Connections" and "ATM Connection Equipment" in the chapter "Preparing for Installation."

The ATM PAMs provide an interface to ATM switching fabrics for transmitting and receiving data at up to 25 Mbps bidirectionally over 12 interfaces.

25 Mbps Module LEDs

The LEDs provide status information for the port adapter module's individual 25-Mbps interface connections. The LEDs are shown in Figure 9-3 and described in Table 9-1.

Table 9-1 25-Mbps PAM LED Descriptions

LED	Description
(Receive)	Off—No receive line activity Flashing green—Cells being received: blinks every five seconds and pulse rate increases with data rate Flashing yellow—Loopback Steady yellow—Alarm FERF[1] Red—Alarm (Line Code Error or LCD[2])

1. FERF = far-end receive failure
2. LCD = loss of cell delineation

Configuring the Interfaces

When the switch is powered on initially without any previous configuration data, the ATM interfaces are automatically configured on the physical ports. ILMI and the physical card type are used to automatically derive the ATM interface type, UNI version, maximum virtual path identifier (VPI) and virtual channel identifier (VCI) bits, ATM interface side, and ATM UNI type.

When you hot-swap a CM or PAM, the configuration for the initially installed PAM interface configuration is saved. If the same type of PAM is reinstalled, no additional configuration is needed. The initial configuration is reestablished.

The interface configuration is described in the section "Default ATM Interface Configuration Without Autoconfiguration."

Default ATM Interface Configuration Without Autoconfiguration

If ILMI is disabled or if the connecting end node is not supporting ILMI, the following defaults are assigned to all twelve 25-Mbps interfaces:

- ATM interface type = UNI
- UNI version = 3.0
- Maximum VPI bits = 2 (least significant 2 bits in the VPI field)
- Maximum VCI bits = 14 (least significant 14 bits in the VCI field)
- ATM interface side = network
- ATM UNI type = private

This concludes the explanation of the 12-port 25-Mbps port adapter module cabling and configuration.